Assessment Annotations
for the Curriculum Frameworks

Mathematics

Grades 4, 8, and 10

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MATHEMATICS- ASSESSMENT ANNOTATIONS

For The

Mathematics Curriculum Frameworks

The attached document provides supplemental assessment information to *Missouri's Framework for Curriculum Development in Mathematics K-12*. Contained within this assessment supplement are annotations that should be useful in understanding state and local responsibilities in assessing curriculum at the fourth, eighth, and tenth grade levels. This document indicates appropriate content and process specifications that should be useful in establishing curricula that prepares students to be proficient in mathematics.

Since the fourth and eighth grade benchmarks were established by the Framework's design, the column labeled, "What Students Should Know," establishes content that is appropriate for state testing. In addition, at the fourth, and eighth grade, the column labeled "What Students Should Be Able To Do" indicates appropriate processes for assessment. The last column labeled "Assessment Notes" further clarifies whether these processes are best assessed at the state or local level. If the phrase " Grade (4 or 8) state assessment" is shown'then this indicates that this process may be tested on the state mathematics examination at the indicated grade level.

Because benchmarks were not explicitly indicated at the tenth grade, the assessment notes provide information for both the "To Know" and "To Do" columns. The assessment notes indicate whether the content and processes are appropriate for assessment at the tenth grade on the state examination. Under the " Know" and "Do" categories in the assessment notes column, if the notation "Grade 10 state assessment" is indicated then this identifies content and processes that may be assessed at the state level. Under the " Do" of the assessment notes, process items are classified on whether these are assessed at the state level or better assessed at the local level. The notation "Beyond 10th grade state assessment" indicates material that students may or may not have covered at this point and therefore is not tested at the state level.

All of the benchmarks that were identified by the notation, "Grade (4, 8, or 10) state assessment," will not necessarily appear on a state test in any given year. The number of test items developed to access mathematical content and processes may vary from year-to-year. Only Framework pages that required assessment notes are provided within this document which results in the skipping of some page numbers.

III. Reasoning

What All Students Should Know	What All Students Should Be Able To Do	Fourth Grade Assessment Notes
By the end of grade 4, all students should know 1. Objects/numbers may be used in more than one way to determine or construct relationships between and among them. 2. Results must be verified. 3. Data may be organized in a variety of forms to look for patterns. 4. Geometric and number properties.	NOTE: Each item in this column is designed to address several elements of "what all students should be able to do." *By the end of grade 4, all students should be able to* a. draw logical conclusions about mathematics (NCTM Standard 3; MO 3.5) b. use models, known facts, properties, and relationships to explain their thinking (NCTM Standard 3; MO 4.1) c. justify answers and solution processes in an organized and convincing way (NCTM Standard 3; MO 1.8, 3.4, 3.7, 4.1) d. use patterns and relationships to analyze mathematical situations (NCTM Standard 3; MO 1.6)	Do a. Grade 4 state assessment b. Grade 4 state assessment c. Grade 4 state assessment d. Grade 4 state assessment

III. Reasoning

What All Students Should Know	What All Students Should Be Able To Do	Eighth Grade Assessment Notes
By the end of grade 8, all students should know 1. Information may be organized in a variety of forms to look for patterns and relationships. 2. Results must bc justified. 3. Geometric and number properties,	NOTE: Each item in this column is designed to address several elements of "what all students should be able to do." By the end of grade 8, *all students should be able to* a. make and interpret mathematical conjectures and rationales for a conclusion (NCTM Standard 3; MO 1.5) b. justify their own thinking (NCTM Standard 3; MO 4.1, 4.4) c. use reasoning processes in regard to spatial reasoning and reasoning with proportions and graphs (NCTM Standard 3; MO 1.6, 1.8, 3.5) d. *recognize* and apply deductive and inductive reasoning (NCTM Standard 3; MO 3.5, 4.1) e. use patterns and relationships to generalize an algebraic representation (NCTM Standard 3; MO 1.6)	Do a. Grade 8 state assessment b. Grade 8 state assessment c. Grade 8 state assessment d. Grade 8 state assessment e. Grade 8 state assessment

III. Reasoning

What All Students Should Know

By the end of grade 12, all students should know

1. **Information may be organized** in a variety of forms to look for patterns and relationships.
2. Results must be justified.
3. Geometric and number properties.
4. The process of inductive reasoning.
5. The process of deductive reasoning.

What All Students Should Be Able To Do

NOTE: Each item in this column is designed to address several elements of "what all students should be able to do."

By the *end of grade* 12, *all students should be able to*

a. make and test conjectures (NCTM Standard 3; MO 1.7)

b. defend the validity of their conclusions using mathematical strategies (NCTM Standard 3; MO 3.4, 3.7, 3.8, 4.1)

c. follow the mathematical reasoning of others and determine validity (NCTM Standard 3; MO 1.5, 2.3)

d. apply inductive and deductive reasoning (NCTM Standard 3; MO 3.5)

Tenth Grade Assessment Notes

Know	Do
1. Grade 10 state assessment	a. Grade 10 state assessment
2. Grade 10 state assessment	b. Grade 10 state assessment
3. Grade **10** state assessment	c. Local assessment
4. Grade **10** state assessment	d. Grade 10 state assessment
5. Grade 10 state assessment	